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Legislative Concerns

There are many questions that arise for the General Assembly when considering the funding of MH/SA/DD services. Here are a few, not necessarily itemized in their order of importance or priority.

1. How many citizens in the State are in need of MH/SA/DD services? (Prevalence)
2. What percentage of all the citizens who need these services are using them? (Treated Prevalence)
3. Are the services being used by those that need them the most? (Priority Populations)
4. Are users of services receiving them with a recommended frequency each month? (Intensity of Treatment)
5. Are users of care receiving services only episodically, (ineffective) or with enough continuity throughout the year to produce positive outcomes? (Continuity of Care)
6. Are the services readily accessible in all parts of the State? (Accessibility)
7. Are the services that are being offered known to produce positive outcomes? (Effectiveness)
8. What are the costs of each of the services being provided? (Unit Cost)
9. What are the aggregate costs for all services, statewide, within each county and each LME?
10. Do comparable services cost more in some counties than in others, and if so why? (Comparability, Standards of Care)
11. How are these services to be paid for and are there any sources of payment that are available but not being used? (Sources of Payment/Funding)
12. Are some counties serving a greater percentage of those in need (have a higher treated prevalence rate) than other counties? If so, is it because these counties have a relatively greater amount of resources per capita for MH/SA/DD services?
13. Are the various parts of the State (counties and LMEs) receiving an equitable share of the general resources available to pay for these services? (Equity)

These are just some of the important questions; others could readily add to the list or suggest ways to consolidate the list into a smaller number by focusing on just a few of the most important questions. Certainly, the answers to some questions, like “What does it cost” are based on the answers to other questions, like “How many citizens have MH/SA/DD problems, and of those, how many are getting services, with how much intensity, and over how long a time period?

In order to understand the process available through the Allocation Model, it is important that those using the model and those using the results of the model understand the basis for arriving at the end result. Some of this information is presented in the *LONG-RANGE PLAN for Meeting Mental Health,*

Developmental Disabilities & Substance Abuse Services Needs for the State of North Carolina because this model was built parallel to that process and use data from the models created for that project.

Mathematical Models

Mathematical models are usually nothing more than a set of formulas designed to make calculations of the quantitative answers to such questions, and to inter-relate these formulas in a way that these variables (prevalence, treated prevalence, frequency, intensity, continuity, unit costs) are inter-related in the real world. Once completed the user of the model can begin to systematically change the values of one or more of these variable to see how it affects the value of some important "bottom-line" variable.

For example, consider the simple formula

Total Cost = (Users) X (Units per User) X (Cost per Unit).

One could calculate that formula for each and every service that is provided to get the Total Cost of all Services.

But some greater complexity is introduced when you consider that some stakeholders, advocates, decision-makers and policy-makers have additional questions that are important to them; such as: "What are the differences in cost between those that use Mental Health (MH) services, and those that use Substance Abuse (SA) services or services for persons with Developmental Disabilities (DD)? "Given the serious limit on total resources, are all three disability groups being served in an equitable manner?

Since some funding sources will pay for only certain services to some individuals but not for other services or other individuals (e.g. Medicaid will pay for only certain services and only for persons who are Medicaid-eligible), it becomes important to calculate the above formula separately for service users who are or are not Medicaid-eligible.

For a variety of reasons, many stakeholders are interested in how services are being used by different age groups within the population: "Are children and adolescents being served well enough and early enough in the process to stem the costs of longer-term problems as adults"? Are the costs of treating children and elderly comparable to the cost of treating adults?

Of course, it is the combination of disability (MH, SA, or DD) and age that may matter to others (e.g. Child MH, Adult MH, Elderly MH; DD Child, DD Adult, etc. etc.). With only three disability groups (MH, SA, and DD), and four age groups (child-adolescents, Youth, Adult, and Elderly) with two sources of funding (Medicaid, non-Medicaid) would produce (3 x 4 x 2 = 24) combinations.

When users of services are organized into similar groupings based on the fact they share common demographic or clinical diagnoses, or eligibility for funding by different payers, they are labeled or called “cohorts”. The leadership of the Division asked that the Model be built to accommodate up to 24 cohorts

Considering that taken together the various services being provided in community-based programs could easily number as many as 100, the above formula for cost would have to be repeated 2,400 times. (24 x 100 = 2,400)

Throw into the service mix the distinction between community-based services and those offered in all the various State Facilities, and the Model quickly reaches the upper limits of comprehension for all but the most senior level leaders who must maintain a total system perspective while making important decisions. Instead of only 50 services one would have to model utilization and cost for 100 services and all of the State Facilities.

Because of all the important factors that may concern all the various stakeholders, the best model would be one that incorporated as many factors as possible. In other words, the formulas that inter-relate the 12 factors in the questions above would have to be separately calculated for each service and for each disability and age group combination, in each county and State Facility. This large number of combinations would make the model very complex but extremely useful if it could re-calculate the important answers for various scenarios posed to it by a decision-maker or policy maker.

- What will it cost if we modify the unit price paid for each service? What if the mix of services was modified, dropping those that are ineffective and replacing them with services that have evidence-based positive outcomes?
- If we changed the mix of services in the community to those with a known effectiveness in reducing expensive inpatient use, could we reduce State Facility cost to a level that allows us to reduce utilization of very expensive facilities and realize a net savings in total cost?
- How would the statewide total cost vary if all counties provided roughly equal levels of service based on the prevalence of MH, SA, and DD cases in their respective populations?
- What would be the cost to the State (for services paid for by General Revenue dollars) if a more limited scope of services (relative to the scope offered to Medicaid-eligible cases) was offered to those persons who needed care but who were not Medicaid-eligible or if the people served were circumscribed by stricter criteria?

If policy makers wanted information specific to each county in the State, the model would have to perform 2,400 x 100 = 240,000 calculations.

Validating the Model

When building such a complex model the modeler needs to validate all the calculations to determine they are working properly and that changes in some variables are being used by the model to affect changes in other variables. For example, if Treated Prevalence (number of persons being served) is assumed to increase by 10%, does the model correctly change the number of users receiving services, which in turn should increase the Total Cost answer? IF MH, SA, and DD consumers use different types of services, does the model have a way of changing the mix for each of the 24 cohorts of users? If the unit cost for a service is increased or decreased, does the Model correctly calculate the corresponding "cost per case" for persons that use those services?

The process of validating a model involves building the model (a spreadsheet in Excel) and populating it with raw data for a predetermined time period, and checking to see if the Model calculates the same answers that are known for that time period. Once the Model is known to produce the correct answers for a known time period, it can be used in a manner whereby the decision makers begin to change known values to assumed values or target values to see how the answers would change. The first Model we built was called the ACTUAL MODEL, and it was built solely to be calibrated and validated using actual service-specific utilization and cost data for 24 cohorts of users in each of 100 counties in NC for the State fiscal year 2005. After the model was tested, refined and properly adjusted it was successful in generating a variety of cost estimates (Total Statewide Cost, Total Costs for each of the three Disability groups, Subtotal costs for General Revenue and Medicaid) that were within 1-3% of the known (actual) values for FY2005.

Results from the Actual 2005 Model

A lengthy report on services by county and the presence of service gaps has already been submitted to the Division entitled: *LONG-RANGE PLAN for Meeting Mental Health, Developmental Disabilities & Substance Abuse Services Needs for the State of North Carolina* which provides extensive details on the results of the Actual 2005 Model as well as the EBP Models for 2005 through 2010. It is important to note that the cost data reflected in the ACTUAL 2005 Model as well as the subsequent models built from the actual version, do not include any county general funds, but only the dollars paid through the claims filing process.

In the models that follow, you will note that we recommend via the logic of the Allocation Model that the State establish a minimum level of treated prevalence that should be met by each county given the funds allocated to a county. Further, future allocation decisions could be made, in part, based on how effective a county was in meeting these minimal targets. In general terms, the State should consider the merits of reducing inter-county variability below a minimum threshold. Difference among counties in treated prevalence rates or levels of spending are to be expected, but less variability should also be expected if those

far below a statewide average rate were expected to increase their productivity or improve their efficiency.

Once the Actual Model was successfully validated with respect to the calculations it carried out compared to the indices using the actual data from claims files, the Actual 2005 Model was used as the foundation to create another version, called the **Evidence-Based Practices Model** (EBP Model).

Evidence-Based Practice (EBP) Model

The EBP Model carried out the same calculations using the same formulas as used in the ACTUAL Model. However, whereas the Actual Model used the actual mix of services being used and paid for in SFY 2005, the EBP Model differed, in that it removed some of the currently-provided services and replaced them with other services known as Evidence-Based Best Practices. In this Model the scope and intensity (frequency and duration) of service was based on research reflecting best- practices; community-based service packages that honor self-determination, family resiliency, recovery principles, and cultural sensitivity for target populations. EBP has a person/family-centered focus on the goals and outcomes identified in each selected life domain of the person with the disability. In any field, best practices are those activities that are responsive and effective, particularly in the experience of the individual. This means that their use must be based on a track record of success and that their value must be clearly evident through research.

As stated above, the EBP Model was simply a variation from the Actual Model, primarily different with respect to the mix of services it used for each of the 24 cohorts. In fact, since each of the 24 cohorts has different clinical, rehabilitation/housing needs, the mix of services was customized for each of the 24 cohorts.

And for each new EBP service that was added, it was necessary to create a reasonable "per-unit cost", since the Model needs a Unit Cost to calculate a Total Cost.

Also, when populating the EBP Model, the frequency of service utilization, (units per user per month) was modified, from the historical (SFY 2005) values to alternative values that were deemed more clinically appropriate, based on research. For some of the historically used services that meant reducing the number of service units per user per month, in cases when it was perhaps provided more often than necessary, and for some historical services it meant increasing the frequency of service units per month (comparable to the metaphor of prescription medicine, which is, if you don't take the minimum dosage, the medicine will be ineffective.)

The EBP Model also allowed for modifications in the continuity of care. A "Continuity Ratio" was defined as the ratio of the Average Monthly Caseload (M) to the Total Annual Caseload (T). This ratio is a general reflection of the consumer's continuity of care during the year. As M increases relative to T, it would mean that consumers are receiving services more months in the year. For

example, when M/T = .5, consumers are receiving, on average, services for 6 months out of 12 months. Since the persons to be served are those with more serious forms of a disability, one would want to see relatively high levels of continuity throughout the year, (receiving services for 6-12 months of the year).

To illustrate the interplay of multiple factors or system goals, there is a relationship between two desirable goals (increasing treated prevalence (i.e. service more of those in need), and improving the continuity and effectiveness of treatment for those already being served. These two factors interact with total service capacity which is highly related to total cost. These two desirable goals can only be accomplished with additional resources to simultaneously serve more people and to serve both continuing and new consumers with enough consistency to have a positive effect.

As continuity increases, without additional resources (cost), it is difficult to increase the total annual number of cases served (treated prevalence) by bringing in consumers new to the system. That step would require increasing the total capacity for more service (assuming current capacity is being fully utilized). In other words, working toward a goal of increasing treated prevalence (the percentage of persons served from among those who have a disability and need care) can be done in two ways: (1) reduce continuity of service for existing consumers to make room to serve new consumers, or (2) increase the total number of unique persons served while maintaining or increasing continuity of care for all consumers. The first option could be exercised within existing spending limits, while the second option would require more capacity and therefore more resources (costs). Exercising the first option would result in consumers receiving less service than needed to maintain the positive outcomes of any treatment they are receiving and would result in ineffective care that would not support the principles of recovery.

The EBP Model is essentially an answer to the question of how much would it cost to do the “right clinical activities”, assuming that some of the activities presently being carried out are ineffective or inefficient. The EBP Model can calculate the cost per treated person for service users within each of the 24 cohorts, given the set of assumptions that members of that cohort received the correct mix of services, with a reasonable frequency per month, over a reasonable span of months (continuity of care)

EBP Models for State Fiscal Years 2005 through 2010

Once an EBP Model was successfully built for the SFY 2005, based on unit costs in SFY 2005, five more versions of the EBP MODEL were created, one for each year, from SFY 2006 through SFY 2010. With each successive year, the EBP Model was adjusted for assumed increases in population, which drives assumed prevalence, cost per unit, which increases with inflation, and incremental increases in assumed level of treated prevalence, which would increase the number of persons served each year, and improved levels in the continuity of care throughout the year, which would assume

increased capacity. However, when increasing treated prevalence rates, the same rate was applied to each county equally. So if County A was serving 30% of their prevalence and County B was serving 50% of their prevalence and we assumed a 5% increase in treated prevalence, then County A's treated prevalence rate would go to 31.5% and County B's treated prevalence rate would go to 52.5%. In other words, the variability across counties would remain as extensive as it was in the Actual Model.

The size of the annual increase in Treated Prevalence and Continuity was established for each of the 5 years such that NC would be at national average levels of treated prevalence and continuity by 2010. Simply increasing population levels may increase prevalence (person in need) but it will not necessarily increase cost, unless rates of treated prevalence (percentage of prevalence actually served) remained constant or increased. In fact, increasing population without increased funding is likely to lead to a reduction in treated prevalence because counties would have to serve fewer persons, or reduce continuity, by serving them fewer months, or reduce intensity of service by providing them fewer units of service per month, than they may need. Without increases in resources to increase capacity, increases in population, and therefore increases in prevalence, would force providers to reduce already low levels of treated prevalence and/or levels of continuity.

Therefore, by assuming increases in population, treated prevalence, continuity and unit costs, each successive EBP Model for 2006 through 2010 projects an increase in the level of needed funding to support such increases.

Once again, we must remind the reader that there is not one single correct answer to the complex set of questions one can ask about such a complex service system. The answer to "What will it cost by SFY 2010?" depends upon many, many assumptions or target goals one could modify and enter into the model for each year from 2006 through 2010. Will inflation be 2.5% or 3%? Should NC strive to be at the level of national averages among other State by 2010? Could the mix of services offered to non-Medicaid eligible persons be limited to save money for increases expected in population? Could the local counties do a better job of enrolling eligible persons into Medicaid so more of the costs will be met by federal resources? Can we stop paying for some services that are known to be ineffective for consumers? Can we reduce the variability among counties so that those that are doing too little might do more and those that are inefficient, with higher than usual cost per treated case could become more efficient? Would standardized statewide rates for services paid for by general revenue to be used by all LMEs throughout the State help to limit larger than usual costs generated in some counties? Could the State provide less service continuity and achieve its desired outcomes?

Results for EBP 2007

The results for services and cost for each of the EBP models, 2005 through 2010 were already presented in the *LONG-RANGE PLAN for Meeting Mental Health, Developmental Disabilities & Substance Abuse Services Needs for the State of North Carolina*" However, for the sake of illustrating how these models can be

used dynamically by the Division, we will present summary data from the EBP 2007 Model that can be directly compared with the earlier results of modeling 2005 ACTUAL data.

The EBP 2007 results will be presented in three related tables, 1A, 1B, and 1C. But before presenting the output (results), it is important for the reader to understand what adjustments were made to the assumed values of the model's inputs.

- Relative to the Actual 2005 Model values we increased population values in every county using the 2007 projected values provided by the State's demographic database.

- We increased each service unit costs by 4% over the 2005 average unit costs (2% for 2006, and another 2% for 2007).

- We increased the statewide average treated prevalence rates according to an amount that would gradually get the State to national average levels by 2010. For 2007, that meant an increase by 12% for all 8 Substance Abuse cohorts (4 ages by 2 payer source), and an increase in the treated prevalence rate for Seriously Mentally Ill (SMI) Adults by only .85%. There were no projected increases for the DD cohorts, whose average treated prevalence rates already reached the level of national average.

- To simulate improved continuity of care we increased the average monthly caseload for SA cohorts by 4% and for MH cohorts by 1.967%. There was no projected increase in the Average Monthly caseload for DD cohorts because they already had a continuity average far above the values for SA and MH (See Table 1C).

Remember that increasing the treated prevalence rates and average monthly caseload values an equal percentage for every county does not eliminate the variability among counties with respect to treated prevalence or continuity of care. To the extent that the legislature is concerned with inter-county variability in rates of treated prevalence and levels of treatment continuity, we will subsequently report on additional types of modeling to reduce such variability.

The assumptions entered into the EBP 2007 Model (4% inflation in unit costs over 2005, increased treated prevalence and continuity, and EBP services being added to the mix and ineffective services being eliminated) would project a per capita cost (i.e. total cost divided by total population divided by 12) of $27.11 for all community-based, globally budgeted, and State Facility-based services, versus a per capita cost in the Actual 2005 model of $20.40. The per capita costs for all programs would have been higher than $27.11 were it not for the fact that introducing EBP services would reduce the cost of State Facility services from a per-capita costs of $5.84 in 2005 to $5.08 in 2007. The cost for State Facilities

was reduced because increases in the type of EBP services were assumed to lead to a net reduction in bed days at State Facilities. Part of the decrease was due to the total costs being divided over a larger denominator (population) but the 2007 EBP Model also assumed a 4% increase in the per diem cost in State Facilities.

As can be seen in Table 1A, the average per capita cost for all DD cases served increased from $6.81 to $7.63, (12%) ; per capita for SA cases increased from $0.58 to $0.93 (60%, but still less than one dollar), and per capita costs for MH cases increased from $7.10 to $8.47 (19%).

Table 1A: Persons Served and Cost per Case and per Capita per Month For the 24 Specific Cohorts based on EBP 2007

Cohort-Specific Summary Information for Community-Based Services Only

	Tabsheet	Age & Funding Specific Population	Total Annual Caseload	Average Monthly Caseload	Persons Served Annually as a Percentage of Age-Funding Specific Population	Total Monthly Cost for Community-Based Services for This Cohort	Annual Cost for Community-Based Services for This Cohort	Average Monthly Cost per Case Served in Community	Average Annual Cost per Case Served In the Community	Annual Cost on a Per Capita per Month Basis
	All DD Subgroups	**8,269,290**	**29,336**	**20,597**	**0.35%**	**$63,708,646**	**$764,503,746**	**$3,093**	**$26,061**	**$7.70**
Medicaid	DD1	637,111	6,433	4,334	1.01%	$13,613,273	$163,359,271	$3,141	$25,394	$1.65
	DD2	48,331	1,253	974	2.59%	$3,665,341	$43,984,090	$3,765	$35,117	$0.44
	DD3	353,581	8,930	7,458	2.53%	$32,615,033	$391,380,399	$4,373	$43,828	$3.94
	DD4	151,277	317	245	0.21%	$938,797	$11,265,559	$3,825	$35,574	$0.11
IPRS	DD5	1,350,836	2,877	1,010	0.21%	$1,774,625	$21,295,496	$1,757	$7,403	$0.21
	DD6	334,576	734	283	0.22%	$487,540	$5,850,480	$1,726	$7,972	$0.06
	DD7	4,560,986	8,478	6,055	0.19%	$10,093,006	$121,116,077	$1,667	$14,285	$1.22
	DD8	832,594	315	238	0.04%	$521,031	$6,252,375	$2,192	$19,871	$0.06
	All SA Subgroups	**8,269,290**	**44,675**	**11,698**	**0.54%**	**$9,158,169**	**$109,898,027**	**$783**	**$2,460**	**$1.11**
Medicaid	SA1	637,111	1,678	573	0.26%	$386,130	$4,633,561	$674	$2,761	$0.05
	SA2	48,331	732	177	1.51%	$295,076	$3,540,912	$1,670	$4,840	$0.04
	SA3	353,581	11,908	3,780	3.37%	$3,524,775	$42,297,305	$932	$3,552	$0.43
	SA4	151,277	233	50	0.15%	$47,871	$574,455	$957	$2,465	$0.01
IPRS	SA5	1,350,836	1,713	396	0.13%	$216,397	$2,596,767	$547	$1,516	$0.03
	SA6	334,576	1,324	256	0.40%	$200,332	$2,403,980	$784	$1,816	$0.02
	SA7	4,560,986	26,896	6,430	0.59%	$4,436,000	$53,231,995	$690	$1,979	$0.54
	SA8	832,594	192	37	0.02%	$51,588	$619,051	$1,395	$3,227	$0.01
	All MH Subgroups	**8,269,290**	**227,163**	**128,429**	**2.75%**	**$108,500,609**	**$1,302,007,303**	**$845**	**$5,732**	**$13.12**
Medicaid	MH1	637,111	58,485	40,452	9.18%	$46,436,955	$557,243,464	$1,148	$9,528	$5.62
	MH2	48,331	4,456	2,260	9.22%	$2,206,914	$26,482,963	$976	$5,944	$0.27
	MH3	353,581	63,830	39,635	18.05%	$15,588,852	$187,066,229	$393	$2,931	$1.89
	MH4	151,277	10,008	5,042	6.62%	$1,463,176	$17,558,109	$290	$1,754	$0.18
IPRS	MH5	1,350,836	23,187	10,063	1.72%	$28,859,088	$346,309,054	$2,868	$14,936	$3.49
	MH6	334,576	2,842	924	0.85%	$842,653	$10,111,830	$912	$3,558	$0.10
	MH7	4,560,986	60,549	28,354	1.33%	$12,524,852	$150,298,226	$442	$2,482	$1.51
	MH8	832,594	3,806	1,699	0.46%	$578,119	$6,937,428	$340	$1,823	$0.07

Table 1B Utilization and Cost of Services by Type of Service, EBP Model 2007

Community-Based Services Only									
By Disability	Base Population Adjusted by Share of Total Cost	Total Annual Caseload	Average Monthly Caseload	Persons Served Annually as A Percentage of Population	Total Monthly Cost for Community-Based Services for This Cohort	Annual Cost for Community-Based Services for This Cohort	Average Monthly Cost per Case	Average Annual Cost per Case	Annual Cost on a Per Capita per Month Basis
DD	8,269,290	29,336	20,597	0.35%	$63,708,646	$764,503,746	$3,093	$26,061	$7.70
SA	8,269,290	44,675	11,698	0.54%	$9,158,169	$109,898,027	$783	$2,460	$1.11
MH	8,269,290	227,163	128,429	2.75%	$108,500,609	$1,302,007,303	$845	$5,732	$13.12
Total	8,269,290	301,174	160,724	3.64%	$181,367,423	$2,176,409,075	$1,128	$7,226	$21.93
Facility-Based Services									
DD	8,269,290	1,914	1,695	0.02%	$17,305,990	$207,671,878	$10,212	$108,478	$2.09
SA	8,269,290	5,568	188	0.07%	$3,446,927	$41,363,120	$18,359	$7,429	$0.42
MH	8,269,290	11,414	1,212	0.14%	$21,258,411	$255,100,934	$17,533	$22,350	$2.57
Total	8,269,290	18,896	3,095	0.23%	$42,011,328	$504,135,931	$13,574	$26,679	$5.08
All Services Based on a Global Allocation									
DD	8,269,290				$53,512	$4,395,026			$0.04
SA	8,269,290				$22,485	$1,500,000			$0.02
MH	8,269,290				$305,503	$3,697,513			$0.04
Total	8,269,290				$381,500	$9,592,539			$0.10
Total For All Services,Including Globally Allocated Services, and All Facilities									
DD	8,269,290				$81,068,147	$976,570,649			$9.84
SA	8,269,290				$12,627,581	$152,761,146			$1.54
MH	8,269,290				$130,064,523	$1,560,805,750			$15.73
Total	8,269,290	Total Annual Costs for All Services for All Cohorts			$223,760,250	$2,690,137,546			$27.11

Table 1C: Summary of Community- Based Services by Payer, Age Groups, Key Indicators of Access & Continuity Based on EBP 2007

Summary of Community Based Services and Services Allocated ona Global Budget By Funding Source									
Mediciad	1,190,299	168,262	104,980	14.14%	$120,782,193	$1,455,774,498	$1,151	$8,652	$101.92
IPRS	7,078,991	132,912	55,744	1.88%	$60,585,230	$730,227,116	$1,087	$5,494	$8.60
Total	8,269,290	301,174	160,724		$181,367,423	$2,186,001,614	$1,128	$7,258	$22.03

Total For Community Based Services By Age Categories (Values needed for County Allocations)									
C	1,987,947	94,373	56,828		$91,286,468	$1,095,437,613	$1,606	$11,608	$45.92
Y	382,906	11,339	4,873		$7,697,855	$92,374,255	$1,580	$8,147	$20.10
A	4,914,567	180,591	91,711		$78,782,519	$945,390,231	$859	$5,235	$16.03
E	983,870	14,870	7,311		$3,600,581	$43,206,977	$492	$2,906	$3.66

Access and Continuity Indicators (Excludes State Facility Caseloads)									
Disability	Total Annual Caseload (T)	Average Monthly Caseload (M)	Continuity = M/T	Relative Access = T/M	Annual Child/Adol Caseload per 1000 C/A Population	Annual Y/A/E Caseload per 1000 Y/A/E Population	Annual Caseload per 1000 Total Population	% of Child/Adol Prevalence Being Treated	Percentage of Y/A/E Prevalence Being treated
DD	23,840	20,597	86.39%	1.157	4.01	2.52	2.88	11.81%	31.49%
SA	40,325	11,698	29.01%	3.447	1.37	5.99	4.88	NA	9.07%
MH	192,296	128,429	66.79%	1.497	34.43	19.72	23.25	34.43%	33.69%

State Facilities									
Disability	Total Annual Caseload (T)	Average Monthly Caseload (M)	Continuity = M/T	Relative Access = T/M	Annual Child/Adol Caseload per 1000 C/A Population	Annual Y/A/E Caseload per 1000 Y/A/E Population	Annual Caseload per 1000 Total Population	% of Child/Adol Prevalence Being Treated	Percentage of Y/A/E Prevalence Being treated
DD	1,914	1,695	88.53%	1.130	0.01	0.27	0.23	2.83%	3.86%
SA	5,568	188	3.37%	29.655	0.001	0.03	0.67	NA	1.34%
MH	11,414	1,212	10.62%	9.414	0.06	0.17	1.38	5.74%	3.10%

At the same time, it is important to note the implications of introducing Evidence-based Practices into the Service mix and removing services known to be ineffective. Based on some EBP practices would not be payable by Medicaid. Therefore, while the per-capita cost of community-based and globally budgeted services could increase from the 2005 level to a higher EBP2007 level, the Medicaid share could go down, while the IPRS per capita costs could rise. In this regard it is extremely important for care coordinators and case managers to ensure that all persons are aided in receiving any entitlements for which they are eligible.

The following three Tables are data from the EBP 2010, the basis upon which the *LONG-RANGE PLAN for Meeting Mental Health, Developmental Disabilities & Substance Abuse Services Needs for the State of North Carolina* was completed.

Table 2A: Persons Served and Cost per Case and per Capita per Month For the 24 Specific Cohorts based on EBP 2010

	Cohort-Specific Summary Information for Community-Based Services Only									
	Tabsheet	Age & Funding Specific Population	Total Annual Caseload	Average Monthly Caseload	Persons Served Annually as a Percentage of Age-Funding Specific Population	Total Monthly Cost for Community-Based Services for This Cohort	Annual Cost for Community-Based Services for This Cohort	Average Monthly Cost per Case Served in Community	Average Annual Cost per Case Served In the Community	Annual Cost on a Per Capita per Month Basis
	All DD Subgroups	**8,662,505**	**29,691**	**21,208**	**0.34%**	**$68,408,140**	**$820,897,678**	**$3,226**	**$27,648**	**$7.90**
Mediciad	DD1	664,174	6,338	4,463	0.95%	$15,705,332	$188,463,987	$3,519	$29,736	$1.81
	DD2	50,241	1,283	1,003	2.55%	$4,116,123	$49,393,473	$4,106	$38,488	$0.48
	DD3	367,394	9,150	7,680	2.49%	$33,061,524	$396,738,282	$4,305	$43,360	$3.82
	DD4	156,843	324	253	0.21%	$919,749	$11,036,985	$3,639	$34,014	$0.11
IPRS	DD5	1,420,130	2,834	1,040	0.20%	$2,554,220	$30,650,636	$2,455	$10,815	$0.29
	DD6	350,274	752	291	0.21%	$532,416	$6,388,988	$1,830	$8,497	$0.06
	DD7	4,784,355	8,687	6,235	0.18%	$11,040,908	$132,490,898	$1,771	$15,251	$1.27
	DD8	869,093	322	245	0.04%	$477,869	$5,734,429	$1,953	$17,787	$0.06
	All SA Subgroups	**8,662,505**	**47,764**	**13,679**	**0.55%**	**$14,383,369**	**$172,600,429**	**$1,051**	**$3,614**	**$1.66**
Mediciad	SA1	664,174	1,794	670	0.27%	$800,744	$9,608,930	$1,195	$5,355	$0.09
	SA2	50,241	782	207	1.56%	$457,729	$5,492,751	$2,215	$7,023	$0.05
	SA3	367,394	12,731	4,420	3.47%	$4,805,331	$57,663,967	$1,087	$4,529	$0.55
	SA4	156,843	249	58	0.16%	$60,269	$723,232	$1,031	$2,902	$0.01
IPRS	SA5	1,420,130	1,831	463	0.13%	$477,272	$5,727,265	$1,031	$3,127	$0.06
	SA6	350,274	1,415	299	0.40%	$412,855	$4,954,259	$1,382	$3,501	$0.05
	SA7	4,784,355	28,756	7,519	0.60%	$7,303,079	$87,636,952	$971	$3,048	$0.84
	SA8	869,093	205	43	0.02%	$66,089	$793,072	$1,528	$3,867	$0.01
	All MH Subgroups	**8,662,505**	**229,676**	**182,077**	**2.65%**	**$260,633,810**	**$3,127,605,722**	**$1,431**	**$13,617**	**$30.09**
Mediciad	MH1	664,174	61,534	57,349	9.26%	$92,763,680	$1,113,164,158	$1,618	$18,090	$10.71
	MH2	50,241	4,402	3,204	8.76%	$3,377,745	$40,532,940	$1,054	$9,207	$0.39
	MH3	367,394	63,065	56,191	17.17%	$25,742,980	$308,915,763	$458	$4,898	$2.97
	MH4	156,843	9,888	7,148	6.30%	$2,278,377	$27,340,525	$319	$2,765	$0.26
IPRS	MH5	1,420,130	24,395	14,266	1.72%	$44,820,408	$537,844,896	$3,142	$22,047	$5.17
	MH6	350,274	2,808	1,310	0.80%	$1,744,926	$20,939,112	$1,332	$7,458	$0.20
	MH7	4,784,355	59,823	40,198	1.25%	$89,043,390	$1,068,520,682	$2,215	$17,861	$10.28
	MH8	869,093	3,761	2,409	0.43%	$862,304	$10,347,646	$358	$2,752	$0.10

Table 2B Utilization and Cost of Services by Type of Service, EBP Model 2010

Community-Based Services Only									
By Disability	Base Population Adjusted by Share of Total Cost	Total Annual Caseload	Average Monthly Caseload	Persons Served Annually as A Percentage of Population	Total Monthly Cost for Community-Based Services for This Cohort	Annual Cost for Community-Based Services for This Cohort	Average Monthly Cost per Case	Average Annual Cost per Case	Annual Cost on a Per Capita per Month Basis
DD	8,662,505	29,691	21,208	0.34%	$68,408,140	$820,897,678	$3,226	$27,648	$7.90
SA	8,662,505	47,764	13,679	0.55%	$14,383,369	$172,600,429	$1,051	$3,614	$1.66
MH	8,662,505	229,676	182,077	2.65%	$260,633,810	$3,127,605,722	$1,431	$13,617	$30.09
Total	8,662,505	307,131	216,964	3.55%	$343,425,319	$4,121,103,830	$1,583	$13,418	$39.65
Facility-Based Services									
DD	8,662,505	1,864	1,643	0.02%	$17,733,877	$212,806,519	$10,794	$114,164	$2.05
SA	8,662,505	5,547	187	0.06%	$3,622,258	$43,467,092	$19,376	$7,836	$0.42
MH	8,662,505	11,414	1,193	0.13%	$22,125,896	$265,510,752	$18,544	$23,262	$2.55
Total	8,662,505	18,825	3,023	0.22%	$43,482,030	$521,784,363	$14,384	$27,717	$5.02
All Services Based on a Global Allocation									
DD	8,662,505				$53,110	$4,395,026			$0.04
SA	8,662,505				$23,574	$1,500,000			$0.01
MH	8,662,505				$295,985	$3,148,136			$0.03
Total	8,662,505				$372,669	$9,043,161			$0.09
Total For All Services,Including Globally Allocated Services, and All Facilities									
DD	8,662,505				$86,195,126	$1,038,099,223			$9.99
SA	8,662,505				$18,029,200	$217,567,521			$2.09
MH	8,662,505				$283,055,691	$3,396,264,610			$32.67
Total	8,662,505	Total Annual Costs for All Services for All Cohorts			$387,280,018	$4,651,931,354			$44.75

Table 2C Summary of Community-Based Services by Payer Age Groups, Key Indicators of Access and Continuity Based on EBP 2010

Summary of Community Based Services and Services Allocated ona Global Budget By Funding Source									
Mediciad	1,238,652	171,542	142,646	13.85%	$184,089,583	$2,213,922,487	$1,291	$12,906	$148.95
IPRS	7,423,852	135,590	74,318	1.83%	$159,335,736	$1,916,224,504	$2,144	$14,133	$21.51
Total	8,662,505	307,131	216,964		$343,425,319	$4,130,146,991	$1,583	$13,447	$39.73

Total For Community Based Services By Age Categories (Values needed for County Allocations)									
C	2,084,305	98,727	78,252		$157,121,656	$1,885,459,872	$2,008	$19,098	$75.38
Y	400,515	11,443	6,314		$10,641,794	$127,701,523	$1,686	$11,160	$26.57
A	5,151,749	182,212	122,242		$170,997,212	$2,051,966,544	$1,399	$11,261	$33.19
E	1,025,936	14,750	10,156		$4,664,657	$55,975,890	$459	$3,795	$4.55

Access and Continuity Indicators (Excludes State Facility Caseloads)									
Disability	Total Annual Caseload (T)	Average Monthly Caseload (M)	Continuity = M/T	Relative Access = T/M	Annual Child/Adol Caseload per 1000 C/A Population	Annual Y/A/E Caseload per 1000 Y/A/E Population	Annual Caseload per 1000 Total Population	% of Child/Adol Prevalence Being Treated	Percentage of Y/A/E Prevalence Being treated
DD	24,113	21,208	87.95%	1.137	3.77	2.47	2.78	11.09%	32.47%
SA	42,925	13,679	31.87%	3.138	1.31	6.11	4.96	NA	10.00%
MH	194,379	182,077	93.67%	1.068	34.55	18.60	22.44	34.55%	34.36%

Defined Benefit Model

A third model, called the Defined Benefit Model, was designed to simulate the effects of establishing a minimum set of services and limits on service units that could be used to project costs in serving the Non-Medicaid population in NC. The Defined Benefit Model can also be modified to adjust the number of non-Medicaid cases served by bringing all counties to within a given percentage of treated prevalence of Non-Medicaid cases. In essence, this adjustment has the effect of reducing the numbers of people served that do not meet "Target Population" criteria or who are not severe enough to warrant priority entry to the system.

The Defined Benefit model was originally designed to calculate an estimate of savings to be realized by restricting the scope and amount of services provided to Non-Medicaid cases to a minimal but clinically appropriate (adequate) level. However, the Division staff elected to not use the Defined Benefit Model in this manner. Rather they choose to limit only the number of persons being served rather than the scope, amount or duration of services. Therefore, the "Defined Benefit" Model was initially populated to calculate costs on a sub-set of the target population (the State's defined priority cohorts within disability categories) rather than on a reduced scope, amount or duration of service. Further, the Defined Benefit Model reduced the population served for only those counties serving more than 10% above the statewide average rate of treated prevalence

In Summary, the Defined Benefit Model assumed a reduction in the statewide number of Non-Medicaid cases being served but not on a systematic basis in all counties. Several assumptions are made, including the fact that a percentage of consumers will receive Medicaid after the first 90 days and that payment is often retroactive. Others may never qualify for Medicaid. In NC, the Medicaid percentage is two percentage points below the national average of 19% Medicaid enrollment for persons receiving mental health services. We recommend that the Defined Model be used to estimate savings to be realized by establishing a limited scope of benefits for Non-Medicaid-eligible cases. Savings can also be realized through limiting the population served under this model as the Division has elected.

Variability Among Counties in Per-Capita Spending

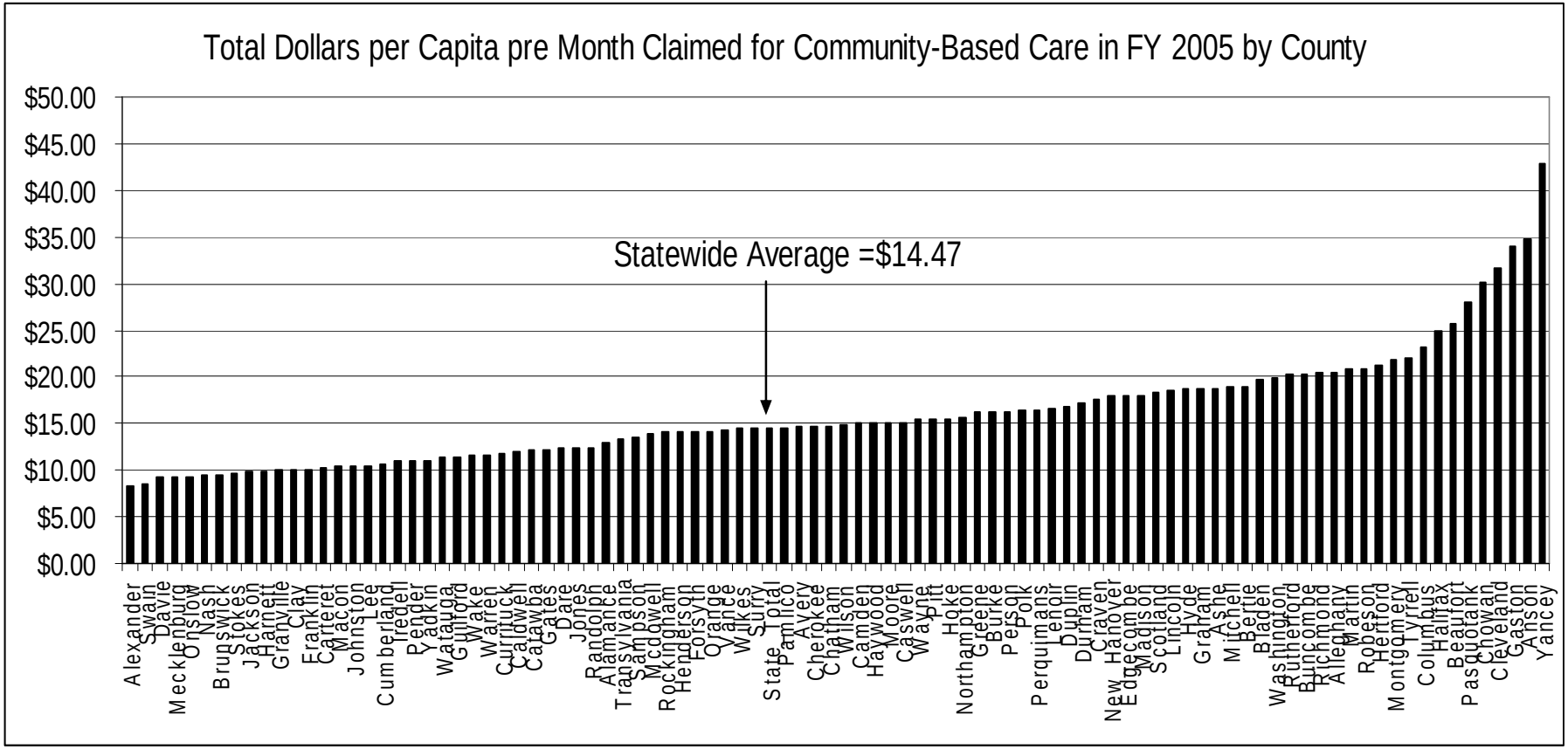
Recall that the EBP Models provide the cost to serve cases with a mix of services that are based on Evidence-Based Practices with an appropriate frequency and continuity. Recall also that there is wide variability among the counties in their rates of treated prevalence and continuity of care. Much of the observed variability in their costs are due to differences among them in how well they provide access to care and continuous care for those who need it.

To illustrate the variability among counties in their claimed cost of community-based services we present the per capita per month costs for Medicaid claims

and IPRS claims as well as the total for both after rank-ordering all counties on each index. These figures were based on SFY 2005 actual data from claims files and are not based on any county-wide estimates generated indirectly by any of the models.

Figure 1 presents the per-capita per month cost by county when combining all Medicaid and IPRS claims. The statewide average annual per-capita cost is $14.47.

Figure 1: Total Dollars per Capita per Month Claimed for Community-Based Care in FY 2005 by County



There is more than a 5-fold difference between the county with the highest rate and the county with the lowest. The Actual 2005 Model estimated a cost at $14.49 per capita. The difference of $.0.02 is due to the fact that the Model is using average modeled calculations to estimate a total cost and per capita cost, whereas the data in the above figures comes directly from the actual 2005 claims data files.

Figure 2 also arrays the counties from lowest to highest per capita per month cost, this time in terms of only Medicaid claimed services The Statewide average is $155.70. There is a 4.84 fold difference between the highest and the lowest counties.

Figure 2: Total Medicaid Dollars per Capita per Month Claimed for Community-Based Care in FY 2005 by County

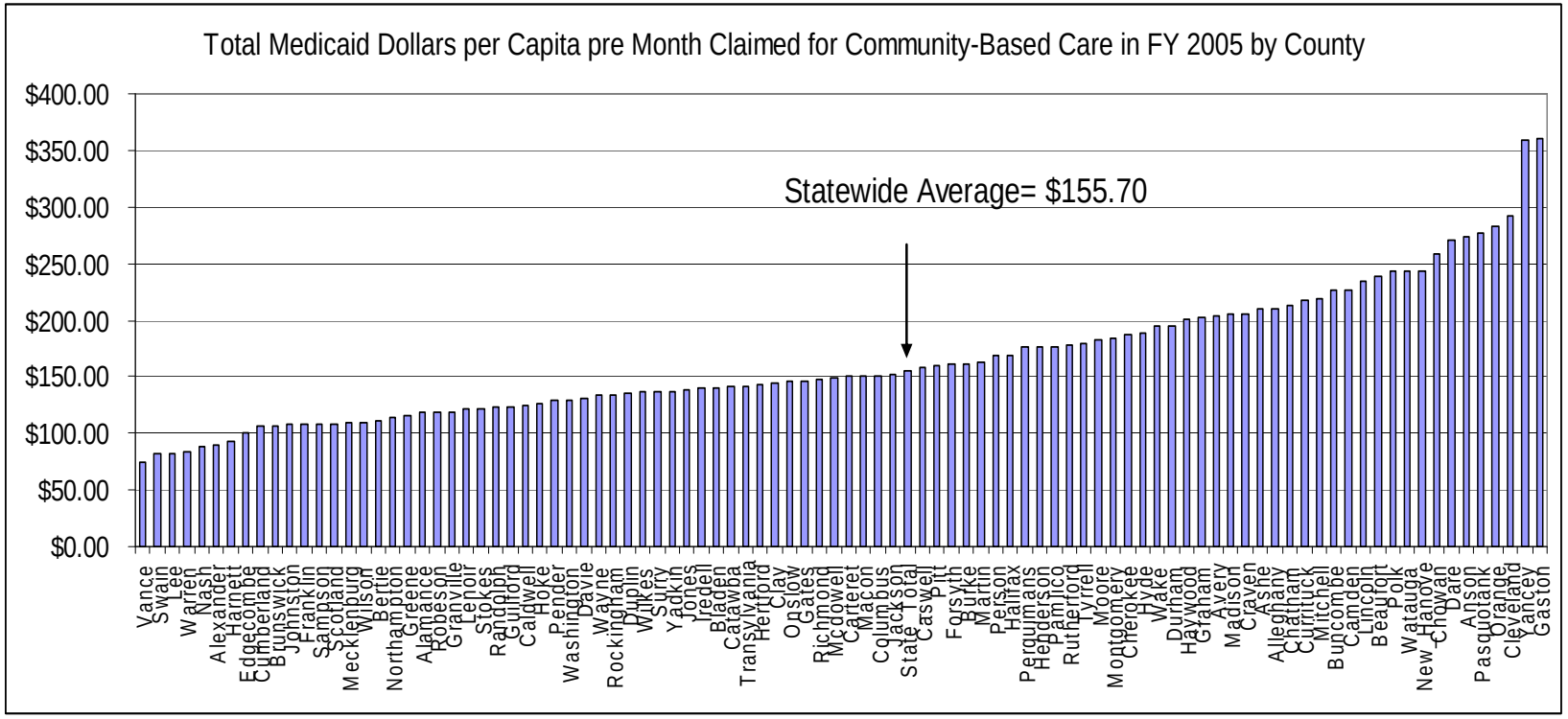
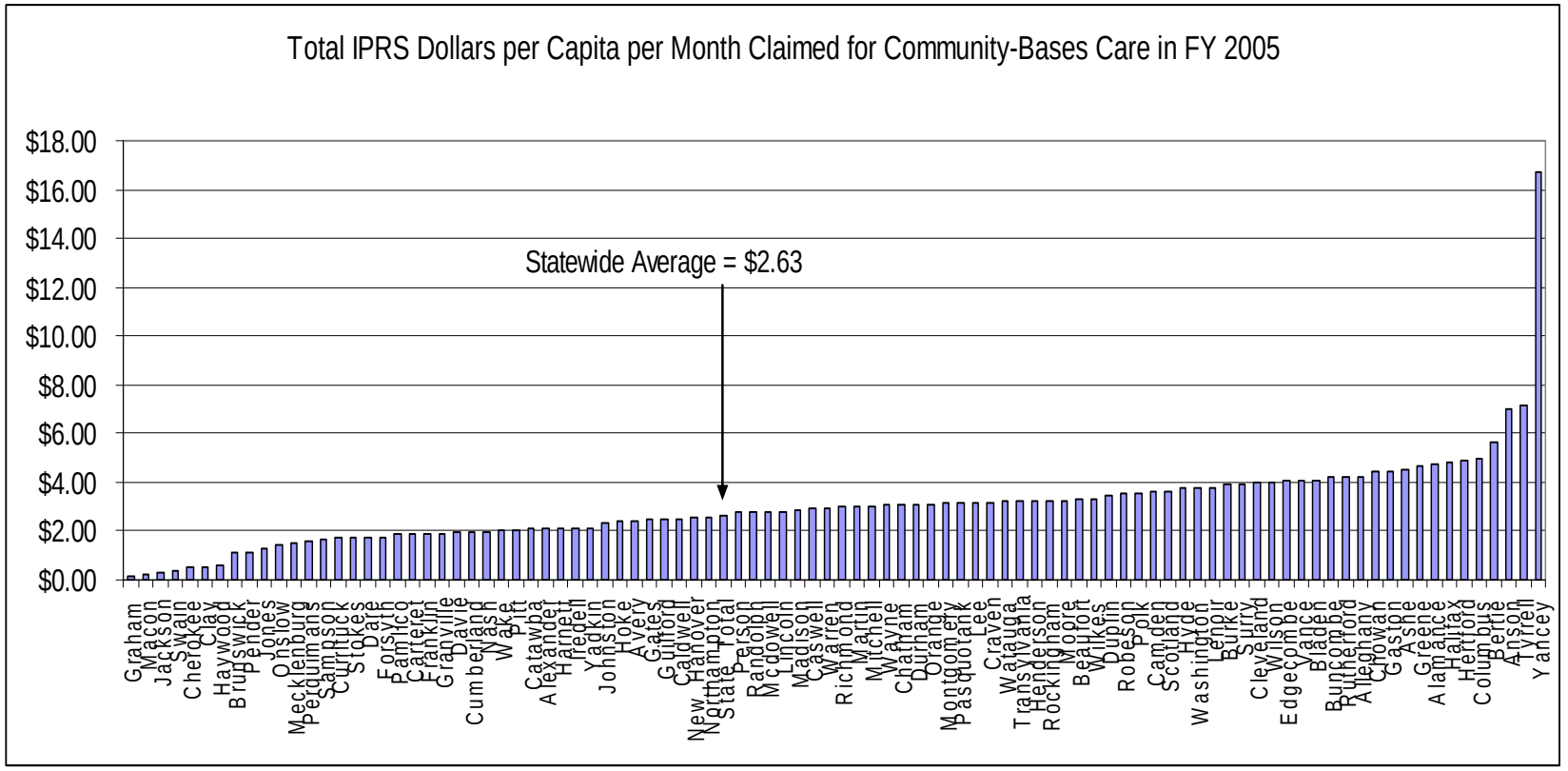


Figure 3: Total IPRS Dollars per Capita per Month Claimed for Community-Based Care in FY 2005



Considering only IPRS dollars, there is far less variability among all the counties. Instead, 3-4 counties seem to be very high relative to others and there is a group of 7-8 that are relatively much lower.

One way to address this variability in funding, is to simulate what the costs might be IF ALL counties were operating at the same level of treated prevalence and with the same minimum standard for continuity of care. While this is not a strategy we would recommend, because it would mean some counties would reduce their rates of treated prevalence and continuity, it would illustrate the impact of reducing inter-county variability in the per capita costs as well as the impact on costs when setting targets for treated prevalence and continuity of treatment.

While we do recommend reducing inter-county variability in treated prevalence, continuity and cost, our recommended method for doing this would be to set a range of expected performance and reduce the variability by requiring counties doing relatively poorly with respect to treated prevalence and continuity to improve their rates while expecting counties that do a better than average job to continue to do so. The impact of this type of strategy will become evident when we introduce the final Allocation Model

To summarize the cascading results moving toward the Allocation Model:

1. The Actual 2005 Model begins by establishing baseline costs based on SFY 2005 actual services and actual levels of treated prevalence and continuity of care among counties.
2. The EBP Model uses the Actual Model's logic and calculations but replaces the mix of services currently being provided with a mix that is based on evidence-based practices. It also adjusts the intensity of services per month to what are considered appropriate levels of service.
3. The Allocation Model cannot remove all of the variability among counties in their rates of treated prevalence and continuity of care nor assume every county achieved the same minimum standards for these measures, but it can "squeeze" the variation toward the middle.

The following Figure 4 presents the variability among counties in terms of their per capita per month cost for MH/SA/DD community–based services based on the EBP2007 Model's unit costs, and 2007 population given alternative assumptions about what "targets" the State would adopt for treated prevalence and continuity of care for the Medicaid-eligible services and cohorts and separate targets for IPRS cohorts.

Figure 4: Per Capita per Month Levels of Cost by Counties under Three Different Scenarios about Rates of Treated Prevalence and Continuity of Care for Medicaid and IPRS Cohorts

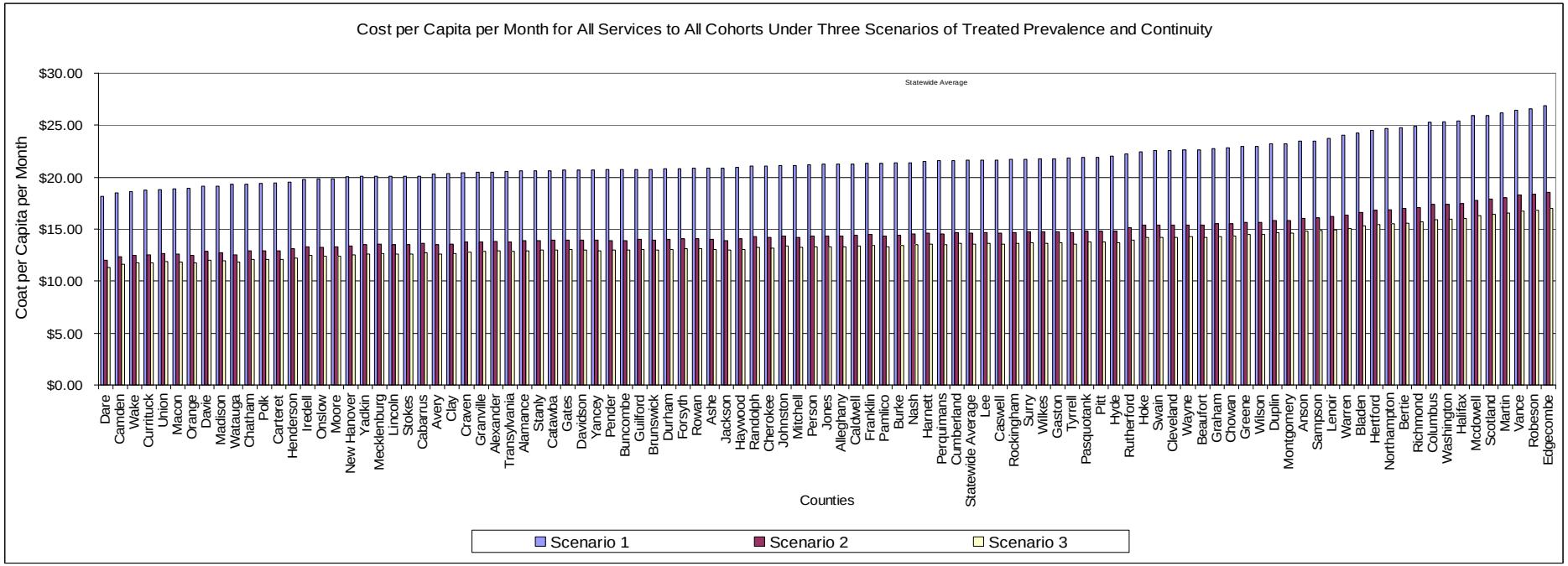


Figure 4 is a bar graph showing the average per capita per month cost for all MH/SA/DD community-based services projected using assumptions in the EBP 2007 Model about population and unit cost, but with all counties assumed to have identical rates of Medicaid Treated Prevalence and Continuity.

The three scenarios are different in the assumed rates of treated prevalence and continuity as will be described below in more detail. At this point it is important to note that there is very little inter-county cost variability in Figure 4, compared to the earlier Figures 1-3 above. There is less than a 1.5-fold difference between the highest and lowest counties. The reason there is any difference among the counties is related to each county's unique mix with respect to the relative size of the 24 cohorts in each county. Those counties that have the greatest percentage of the persons they serve made up by the most expensive cohorts would also have the greatest cost on a per capita basis.

The following tables present summary data on assumptions made for each of three scenarios and how the total projected (i.e. modeled) statewide cost would compare with 2005 Actual Costs. Each scenario is a set of separate assumptions for Medicaid and IPRS with respect to Treated Prevalence and Treatment Continuity. Scenario 1 assumes "aggressive" targets for Treated Prevalence and Continuity. (Recall that the average level of Treated Prevalence across all cohorts and counties (statewide) is only 23%. Scenario 2 represents relative to Scenario 1 more "modest" goals for both Treated Prevalence and Continuity, while the third scenario maintains Treated Prevalence at the same levels as Scenario 2 but reduces goals for Continuity of Treatment. Each scenario projects separate goals for the 12 cohorts with Medicaid-eligibility and the 12 cohorts whose services are paid for by IPRS. For example, on the assumption that cases whose care is paid for by IPRS may be less severe (since they are not Medicaid-eligible) and their services could be more episodic (less continuity), a goal of Continuity of only 8% is equivalent to an assumption that when served, they receive services only one month out of 12. Similarly, one might assume that the State could set more modest goals for levels of Treated Prevalence among non-Medicaid eligible cohorts.

The model was built to illustrate how levels of Treated Prevalence and Continuity can impact on total costs. The minimal assumptions in Scenario 3 project only a 2% increase in 2007 costs over 2005, whereas the more aggressive goals would project a 62% increase. It is important to note that these total costs estimates may not compare in relative size to actual cost figures because they are based on MODELED costs based on a large host of alternative treatment assumptions that could affect the relative costs of Medicaid vis-à-vis IPRS.

The following Table represents the assumptions (targets for Treated Prevalence and Treatment Continuity) made in Scenario 1.

Scenario 1: Aggressive Goals for Treated Prevalence and Continuity of Medicaid Cohorts; Comparable Tx Prevalence & Low Continuity for IPRS			
	Goals for Treated Prevalence		
		Medicaid	IPRS
	DD	50%	50%
	SA	25%	25%
	MH	35%	35%
	Goals for Continuity		
		Medicaid	IPRS
	DD	90%	8%
	SA	50%	8%
	MH	75%	8%
	Total Annual Medicaid Costs	Total Annual IPRS Costs 2005	Total Annual Cost Across All 24 Cohorts 2005
2007 (Note 1)	$1,894,887,263	$360,324,797	$2,255,212,060
2005	$1,156,651,847	$233,435,484	$1,390,087,331
Difference	$738,235,416	$126,889,313	$865,124,729
%	64%	54%	62%
Note 1: 2007 Costs Include a 2% per Year Inflation in Average Unit Cost			

The assumptions made for Scenario 2 are summarized in the following table.

Scenario 2: Modest Goals for Treated Prevalence and Continuity of Medicaid Cohorts; Comparable Tx Prevalence & Low Continuity for IPRS

	Goals for Treated Prevalence	
	Medicaid	IPRS
DD	50%	50%
SA	20%	20%
MH	30%	30%

	Goals for Continuity	
	Medicaid	IPRS
DD	75%	8%
SA	35%	8%
MH	50%	8%

	Total Annual Medicaid Costs	Total Annual IPRS Costs 2005	Total Annual Cost Across All 24 Cohorts 2005
2007	$1,210,388,297	$313,054,887	$1,523,443,185
2005	$1,156,651,847	$233,435,484	$1,390,087,331
Difference	$53,736,450	$79,619,404	$133,355,854
%	5%	34%	10%

Note 1: 2007 Costs Include a 2% per Year Inflation in Average Unit Cost

This final Table reflects the assumptions and results for the Third scenario.

Scenario 3: Minimal Goals for Treated Prevalence and Continuity of Medicaid Cohorts; Comparable Tx Prevalence & Low Continuity for IPRS

Goals for Treated Prevalence		
	Medicaid	IPRS
DD	50%	50%
SA	20%	20%
MH	30%	30%

Goals for Continuity		
	Medicaid	IPRS
DD	67%	8%
SA	33%	8%
MH	42%	8%

	Total Annual Medicaid Costs	Total Annual IPRS Costs 2005	Total Annual Cost Across All 24 Cohorts 2005
2007	$1,102,614,002	$313,054,887	$1,415,668,890
2005	$1,156,651,847	$233,435,484	$1,390,087,331
Difference	($54,037,845)	$79,619,404	$25,581,559
%	-5%	34%	2%

Note 1: 2007 Costs Include a 2% per Year Inflation in Average Unit Cost

The actual observed variability among counties in their per capita cost are obviously due to differences in their case mix among the 24 types of cases as well as how well they provide access (treated prevalence rates) and continuity of care. To reduce all variability is an overly simplified assumption that all counties could be “reset” to a single level of treated prevalence rates and continuity. This is indeed impractical. However, the model does illustrate very aptly that improving treatment rates does cost more money.

In turn, some of the actual variability we observe among counties may be due to historical patterns in how funds were allocated in the past, suggesting that the difference in counties clinical performance is based in part on inequities in the allocation process, (i.e. some counties getting relatively less than others based on their level of need (prevalence) and their ability to supplement allocated State general revenue funds.) There is also clear evidence that some counties do a better or worse job than others in supporting the cost of care with Medicaid dollars by how well they do in getting eligible cases actually enrolled in Medicaid, rather than using IPRS dollars.

To develop a better perspective on possible allocation inequities, the Allocation Model was designed to simulate the fiscal impact if the Division could (1) reduce the variability among counties in their Medicaid penetration rates (success in enrolling patients into Medicaid), and (2) take into consideration each LME's and county's ability to supplement the total budgetary needs of community-based MH/SA/DD care. In other words, this model allows the Division staff to explore the implications of using State dollars primarily as a supplement to the total budgetary needs of a county after taking into account reasonable expectations for their ability to use Medicaid funds and local contributions that might include county general funds, recovery of insurance proceeds, first party payments, etc. That is, the Allocation Model can be used in such a way as to assume that local contribution would not be changed, only taken into consideration when allocating State dollars. This Model, of course, raises a major policy question for the legislature: What is the appropriate use of the State General Revenues, as a first or last dollar resource to local communities?

Allocation Model

The Allocation model was designed to incorporate results from the EBP Cost Models (the ideal cost per case) and the results from the Idealized County Cost Model to address possible current inequities in how the State's general revenues are allocated among counties. The EBP Cost model generates a target cost per case for a desirable mix and level of services for each of the 24 clinical cohorts to be served (i.e. the ideal type of services to be provided, and an ideal intensity of monthly service provision). This case rate is then applied to the estimated number of persons to be served, as if each county was operating within an acceptable range of treated prevalence and continuity. These adjusted ranges in turn generate an estimated reasonable cost per county that has to be allocated between two payers: Medicaid and the State of North Carolina. The Allocation model provides the analytical tool to help optimize an efficient and equitable distribution of these costs between the two payers.

It has been recognized that past funding approaches and local management behavior (regarding both funding decisions and service provision) have resulted in funding and level of care differences (e.g. measured as dollars per client or dollars per capita) among the various local entities responsible for providing services. In some instances the differences or portions of the differences are justifiable due to differences in actual need and in other instances the differences or portions of the differences represent historical funding inequities that result in inequities in service provided to one subset of the population relative to another. The goals of the Allocation model are to

1) Identify differences in funding and determine what percentage of the differences are due to valid differences in need, thereby identifying the remainder as inequities in funding and
2) Reduce of eliminate the inequities.

Local management behavior will adapt to reduction or elimination of funding inequities by becoming more efficient, which in turn will result in better service for all consumers statewide.

Allocation Model Methodology

The EBP Cost models provide the basic inputs for the Allocation model.

- Population. Total population and Medicaid enrollee population is estimated based on historical data.
- Prevalence/Treated Prevalence. These models provide important inputs regarding how many people within a given county should be treated (treated prevalence) based on current methodologies to estimate total prevalence.
- Cost of Services. The primary input is cost of services, calculated by cohort for a target protocol of services with the ultimate goal of achieving "best practice". These estimates reflect both best practice services and intensity of service. The direct input to the Allocation model comes from a model called the Idealized County Cost model. This model is a derivative of the EBP cost model for the given year of allocation. It allows the Division to adjust treated prevalence and continuity levels to the EBP results to achieve target budget levels for overall cost of services.

Given the inputs described above, the Allocation model progressively calculates the portion of total costs that can be assigned to each of the payers.

Allocation Model Medicaid

The model starts the analysis with Medicaid. In the past, counties have varied in their ability to optimize two aspects of Medicaid billing: 1) the number of eligible clients who actually are enrolled in Medicaid, and 2) the dollars per Medicaid enrollee that are billed. The Allocation model compares counties on the number of eligible clients who actually are enrolled (calculated as a percentage so that counties of differing population sizes can be compared) and applies a mathematical algorithm to calculate what each county should be achieving in terms of Medicaid enrollment. For example, the model will determine the rank of counties for the calculated variable "Medicaid Clients as a % of Total Enrollees".

Some of the variability in the range of values for this variable across counties will be due to legitimate differences in the population (not under management control) and some of the variability will be due to management practices e.g. efforts to get eligible clients properly enrolled for Medicaid. The Allocation model will "squeeze" out variability mathematically that is under management control. Each county will be assigned a new value for this variable that will allow the model to calculate how many clients should be receiving Medicaid services. When compared with projections made from historical data, the values determined from the Allocation model will indicate that some counties have to

increase the number of Medicaid clients, while others will have approximately the right number, and others will have too many Medicaid clients.

In determining an "adjusted" number of Medicaid clients, the Allocation model offers two options. The EBP models calculate number of Medicaid clients based on estimates of prevalence and targets for treated prevalence. These "idealized" values can be used as is (no "squeezing") or the user can choose to utilize the squeezing algorithm applied to actual historical values of the variable "Medicaid Clients as a % of Total Enrollees". A reason for using this latter approach would be that the goals for treated prevalence assumed by the EBP models were felt to be unrealistic, either for the State as a whole, or for some subset of the counties. Switching between options is easy and quick and can be done by the analyst to determine the impacts of these options. Using one option in a given year does not preclude changing the option in subsequent years.

Once the model has assigned an adjusted number of Medicaid clients by county, it next needs to determine the appropriate annual cost per Medicaid client by county. Again, variation across counties in annual cost per Medicaid client indicates differences in how service is provided or billed for this population. The EBP models developed for a companion project calculate the annual cost per Medicaid client by county, assuming that a given level of best practice has been achieved. These values are directly entered into the Allocation model. The Allocation model now has both adjusted values for the number of Medicaid clients and the annual cost per Medicaid client for each county. These two variables allow a calculation of the total Medicaid dollar share by county or LME. The new calculated values will indicate that some counties historically have not been billing an appropriate amount per Medicaid client. The adjusted values effectively will tell the model how much each county should be billing for each Medicaid client. Compared with projections based on historical billing patterns, some counties should increase total Medicaid billings (more Medicaid clients and/or higher per Medicaid client billings), some will be approximately the same as historical patterns, and some could decrease Medicaid billings (fewer Medicaid clients and/or lower per Medicaid client billings).

Note that the model does not force counties to change Medicaid billing behavior, but calculates contributions from the State **AS IF** Medicaid billing had changed according to the adjusted (squeezed) results. Each county could use the results as a management tool to evaluate their Medicaid billing effectiveness. Specifically, a county could look at the values for both number of clients and Medicaid cost per client determined by the model to see how their actual values compare. Simply looking at total Medicaid billing is not adequate – a county might have a total Medicaid billing value that is very close to what the Allocation model calculates, but it might be achieved through an imbalance of the two component variables, e.g. a too high value for number of Medicaid clients paired with a too low value for Medicaid cost per client. By factoring in the "AS IF" Medicaid estimates noted above, this allows the State to allocate State resources

in a manner which assumes counties and LMEs will achieve the desired level of Medicaid participation. This process then reduces or eliminates an unintended consequence of the State supplementing local service provision which should reasonably be funded by Medicaid earnings.

Allocation Model State and Local

After the Medicaid costs, as the major payer source, are calculated, the Allocation model assumes that the remainder of the targeted treated prevalence will be paid for by a combination of State, NC Health Choice for Children and potentially local funds.

To achieve an equitable distribution of resources for the provision of community-based mental health, developmental disabilities and substance abuse services, one would strive for a funding partnership among Medicaid resources, State resources and local resources (e.g., with local potentially including county general funds, insurance payments, first party payments, etc.). However, integration of local resources into the allocation mix to achieve equity in funding is a complex issue, particularly as it may relate to expected county general fund contributions. N.C. General Statues do not require a minimum level of county contributions for mental health, developmental disabilities and substance abuse services, rather the county statutory funding requirement is related to counties maintaining at least the historical level of county support and not making funding reductions (with the exception of one-time county funds allocated to LMEs).

Utility built into the Allocation model provides the framework to **potentially** factor in funding considerations for county funds, etc., as a variable in determining the equitable allocation of resources to LMEs. However, incorporation of county funding considerations, based on an “ability to pay”, will not be considered for implementation within the Allocation model without prior consultation and input from the N.C. Association of County Commissioners, LMEs, and appropriate legislative review. Consultation with representatives of the N.C. Association of County Commissioners and LMEs has been initiated, with the first hands on meeting with the draft Allocation Model to occur during January 2007.

Since the three major funding sources for community mental health, developmental disabilities and substance abuse services are Medicaid, State resources and county general funds, consideration of county funding is reasonable to at least consider when seeking overall funding equity at the local level. Analysis of county contributions showed a wide variation in amounts contributed when measured on a per capita basis. In SFY 06, for example, budgeted county general fund contributions, on a per capita basis, ranged from a low of $.61 to $53.39, with the statewide average being $12.54. It is recognized by the Division that there are a number of factors that combine to create significant and legitimate economic variability across counties. As such, it was felt that the Allocation model should be designed to have the capability to reduce

(squeeze) county funding variance, but with implementation being considered only after consensus has been reached on methodology.

The methodology for determining a fair share for the county contribution involves determining the ability of the county to pay. As mentioned above, this capability was included in the design of the model along with the option for the user (the Division) to effectively turn it off. This might be accomplished by comparing county contribution to the total property valuation, or other reasonable measures of "ability to pay" in the county, on the assumption that a county's ability to raise revenue is strongly (positively) correlated with property valuation. Historically, the ratio of county contribution to total property valuation shows a very large range or variation. The Allocation model, as currently constructed, could use a mathematical algorithm to squeeze this variation, while maintaining the same rank ordering of all counties. The objective is to reduce the variation in this ratio to eliminate inequities arising from decisions that are under management control of the county. The adjusted (squeezed) ratio values for each county are then multiplied by each county's property valuation to get an adjusted value for the county contribution. The Allocation model includes a feature that allows these contributions to be escalated to account for inflation and other time-value factors, e.g. if the most current year of data is 2005 and the model is allocating for 2007, then the contribution values can be adjusted for two years of inflation. In general, the model assumes that the total amount contributed by all counties is equivalent to historical values, adjusted, if desired, for inflation only.

In this potential funding progression, the county contribution would then be subtracted from the combined county and State portion (what has been termed the "remainder" after the Medicaid portion is determined) to determine the amount to be paid by the State. As noted above in the description of Medicaid estimates, any considerations related to county funding would be treated in an "AS IF" scenario, that is, adjusting expected county contributions would NOT be a requirement for increased county funding since the Division does not have the authority to do so. The results, however, could be considered "AS IF" county funding increases had taken place in order to determine a more equitable distribution of State resources among LMEs. In other words, if a county could reasonably increase its county contribution, per the Allocation Model, but fails to do so, the Division would not make up that difference from State resources.

Transition

The Allocation model is intended to be used year after year for the foreseeable future. It is unlikely and unreasonable to think that all of the inefficiencies and inequities can be eliminated in just one funding cycle. In fact, the Allocation model relies heavily on inputs from the EBP Cost models. These models represent a transition over a number of years to help move the State from current service patterns to best practice goals. As our knowledge of treatment protocols evolve, so does our definition of "best practice". As such, there always may be refinements to our current standards and therefore, a need for both EBP

modeling and Allocation modeling. Furthermore, fiscal realities may force the State to make compromises in the transition process, meaning that best practice may take longer to achieve. Adjustments in goals because of fiscal constraints can be accommodated by both the EBP Cost models and the Allocation model.